BULLETIN
OF THE
BRITISH ORNITHOLOGISTS' CLUB

Volume 81
Number 3
Published: 1st March, 1961

The five hundred and eighty-eighth meeting of the Club was held at the Rembrandt Hotel, S.W.7, on 21st February, 1961.

Chairman: CAPTAIN C. R. S. PITMAN

Members present, 38; Guests, 15; Total, 52.

The Chairman opened by thanking Mr. R. A. H. Coombes for all that he had done for the Club in managing the sales of bulk numbers of the Bulletin, which had made such a difference to the Club's finances. Mr. Coombes was having to give up on moving to Scotland and Mr. N. J. P. Wadley was taking over from him.

Passerine migration across the Mediterranean and the Sahara

Mr. R. E. Moreau gave a most interesting talk on this subject, of which the following is a summary as a full account will appear in the Ibis.

By far the greater part of all the insectivorous birds of Europe cross to tropical Africa for the winter. The difficulties of the journey are great, especially in spring. The desert is nearly 1,000 miles wide from north to south and only a small fraction of its surface offers, in oases or mountains, the chance of a bird's resting in the shade by day or of recuperating its strength. The winds are predominantly northerly, so that the migrants have on the whole following winds in autumn, but head-winds in spring, when an ability to fly for some fifty hours practically non-stop seems essential.

Far more birds are seen on the southern coast of the Mediterranean (and in the northern cases of Algeria) in spring than in autumn, when at least twice as many birds must be travelling. This is interpreted to mean that in spring birds break their journey far more than in autumn. There is indeed reason to suppose that a great many birds travel from Europe to tropical Africa non-stop in autumn; but there are baffling differences between species.

The systematic position of the Marbled Teal

by PAUL A. JOHNSGARD

Received 9th December, 1960

Summary

Although the Marbled Teal has always been considered a typical surface-feeding duck, and has usually been included in the genus Anas, *several*

aspects of its behaviour and the structure of the male's trachea indicate that it also has affinities with the pochards, and especially with the genus Netta. *It is therefore suggested that the Marbled Teal be placed in a monotypic genus* (Marmaronetta *Reichenbach*) *and be considered an evolutionary link between the surface-feeding ducks* (*Anatini*) *and the pochards* (*Aythyini*), *but tentatively retained in the former tribe.*

The Marbled Teal (*Anas angustirostris* Ménétriès, *Cat. Rais. Obj. Zool. Caucase*, 1832, p. 58) is a species which, perhaps because of its dull-coloured plumage, has not attracted much attention from students of waterfowl. However, it is a species which is unusual in nearly every respect, including its geographic range which, unlike that of any other duck, is centered around the Mediterranean region. Adults of both sexes are well described by the term "marbled", and the entire plumage is a creamy grey, or isabelline, colour. In contrast to other *Anas* species such as the outwardly similar Cape Teal (*Anas capensis*) (which Delacour, 1956, considers a close relative of the Marbled Teal), the contour feathers have dark grey edges and lighter centres instead of light edges and darker centres. There is a greater similarity between the adult plumages of the Marbled Teal and the South American Crested Duck, which has been traditionally included in *Anas* but which Delacour (1954) considers an aberrent shelduck (*Lophonetta specularioides*). Both sexes of the Marbled Teal have slight nape crests and dark postocular stripes, but these are more conspicuous in adult males. Otherwise, the sexes differ only in bill colour and pattern. The adult male has a uniformly dark bill except for a narrow lighter subterminal bar, similar to that found in various pochard species, whereas the female lacks this bar and has a light yellowish triangular area on each side of the maxilla.

Foremost of the Marbled Teal's plumage pecularities is its lack of a metallic coloured speculum; the colouration of the secondaries is not in any way differentiated from that of the primaries or the upper wing coverts. No other species of *Anas* has such a uniformly coloured upper wing surface, which is reminiscent of certain pochard species such as Red-crested Pochards (*Netta rufina*) and Common Pochards (*Aythya ferina*). In this respect the Marbled Teal differs markedly from the Crested Duck, which has a conspicuous bronze-coloured speculum with a white posterior border.

It is now widely recognised that downy plumage patterns are of great importance in judging evolutionary relationships, and thus the downy plumage of the Marbled Teal is of interest. This plumage, which has been illustrated by Peter Scott (in Delacour, 1956), is a weakly-patterned pale buff and brown, quite distinct from the downy plumages of the Crested Duck or the Cape Teal. Indeed, the back-spotting and eye-stripe are so reduced that the overall appearance is almost more like that of a downy Red-crested Pochard than of a typical member of the genus *Anas*. The juvenal plumage is scarcely separable from the adult plumage, and is thus of no value in judging relationships.

Two aspects of the Marbled Teal's general behaviour are of importance. The first is that the pre-flight, or "flight intention", movements of this species set it apart from all other species of *Anas*. Unlike these species,

which use repeated "neck-jerking" movements (McKinney, 1953) before taking flight, Marbled Teal perform rapid "chin-lifting" movements (McKinney, 1953), exactly as are performed by most and probably all species of pochards in the same situation. Secondly, the Marbled Teal dives occasionally when feeding, but normally feeds by up-ending. When diving, it usually opens its wings to assist in submerging in the manner of most (but not all) dabbling ducks. The hallux is no more strongly lobed than in the other species of *Anas*.

Female Marbled Teal lack the strong "quacking" voice typical of *Anas* females, and instead have only a weak note similar to the male's. Thus females lack the "Decrescendo call" (Lorenz, 1951–1953) which is characteristic of every other species of *Anas* which has thus far been closely studied. The female's primary courtship display, in common with all species of *Anas* and pochards (*Netta* and *Aythya*) thus far observed, is the display that Lorenz (1951–1953) has termed "Inciting". The actual movements involved during Inciting vary greatly in different species, but in all they consist of alternated threatening and escape components. In the Marbled Teal the threat aspect consists of an overt threatening approach towards a strange or unfavoured drake, followed by a rapid retreat towards her mate or potential mate. This form of Inciting is more like that of some pochard species (e.g., Red-crested Pochard) than any *Anas* species known to me. Females also perform somewhat simplified versions of the male's major courtship displays.

The male's pair-forming behaviour will not be described in detail here, but a few points should be mentioned. The first is that the male's voice is normally heard only during display, and has been described (Jones, 1951) as a nasal squeak. This is usually uttered as the head is suddenly jerked backwards and downwards onto the back, whereas in the Cape Teal and the other "spotted teal" (Delacour, 1956) the courtship whistle is uttered as the neck is stretched upwards. No species of *Anas* known to me has a male display exactly like this, although the much slower "Bridling" display (Lorenz, 1951–1953) of such species as the Chilean Teal (*Anas flavirostris*) is outwardly similar. Likewise no pochard species has an exactly equivalent male display, but the pochard "Head-throw" (Hochbaum, 1944) functions in the same manner through producing sound by suddenly stretching the trachea to its greatest extent as air is exhaled. A second major display of the male Marbled Teal consists of silently stretching the head and neck out over the water with the bill pointing towards the courted female or towards another male. This display is not typical of any species of *Anas* known to me, but the "Sneak" posture (Hochbaum, 1944) of male pochards is similar in every respect. In common with both the surface-feeding ducks and the pochards, male Marbled Teal "Turn-the-back-of-the-head" (Lorenz, 1951–1953) towards Inciting females at every opportunity.

The most significant of all aspects of waterfowl behaviour, biologically as well as taxonomically, are the behaviour patterns associated with copulation. No other form of behaviour is so rigidly uniform in each taxonomic group, and thus so useful in classification, as pre-copulatory and post-copulatory behaviour. In the species of *Anas*, excluding the Marbled Teal, for which I have personal observations (31 out of 35 species), in every case mutual "pumping" (Lorenz, 1951–1953) of the

head is the primary pre-copulatory behaviour. In no case has drinking or preening dorsally been observed, although Cape Teal (*Anas capensis*) sometimes preen behind the wing in the early stages of pre-copulatory display. Among the pochard group I have observed pre-copulatory behaviour in 13 out of the 15 species, and in every case the male (and sometimes also the female) has performed drinking and preening dorsally. A rudimentary form of mutual head-pumping also occurs in one species (*Netta rufina*), and slight head-pumping by one sex only occurs in four other species. In the Marbled Teal pre-copulatory behaviour consists entirely of alternately drinking and preening dorsally, performed synchronously by both sexes, without the slightest indication of head-pumping.

Post-copulatory behaviour is of almost as great taxonomic significance as pre-copulatory behaviour. In the genus *Anas* this is somewhat variable, but in all species thus far observed (19) the male calls once, either with the neck extended vertically or in the "Bridling" posture, then swims away from the female or turns and faces her as she bathes. Post-copulatory behaviour in the pochards is known for 13 out of the 15 species. In every case the male calls once immediately after releasing his grasp of the female's nape feathers, then swims away from her in a special "Bill-down" posture, with the bill held rigidly downward towards the breast, while the female begins to bathe. Post-copulatory display in the Marbled Teal is exactly like that of the pochard group.

In connection with this most unusual copulatory behaviour of the Marbled Teal, it is of great interest that the only hybrid known involving the Marbled Teal is not with another species of *Anas*, but with the Common White-eye (*Aythya nyroca*), the hybrid being bred in captivity (Gray, 1958). It seems, because of its pre-copulatory behaviour, that successful copulation between Marbled Teal and one of the pochards is more probable than between Marbled Teal and a typical *Anas* species.

One of the most important anatomical differences which separate the *Anas* group from the pochards concerns the structure of the tracheal *bulla* in males. Males of all *Anas* species (34) thus far observed by me or described in the literature have *bullae* which are asymmetrically enlarged towards the left, rounded in shape, and entirely ossified. In all but three of these species the tracheal tube is relatively uniform in diameter and is not markedly larger than that of the female. In one of the three exceptional cases (*Anas querquedula*) the trachea gradually increases in width towards the *bulla*, while in the other two (*Anas versicolor* and *A. punctata*) there is an abrupt enlargement near the middle of the tracheal tube. However, the structure of the male's trachea in at least 13 out of the 15 species of pochards is altogether different. In these species the tracheal *bulla* is of a highly distinctive shape, being enlarged towards the left, with an angular anterior crest, and with several membranaceous *fenestreae* present, the largest located on the flattened left surface. In nearly all species the tracheal tube of the male is larger than the female's and has one or more swellings near the middle, which may be gradual or fairly abrupt. The trachea of the male Marbled Teal has been mentioned by Phillips (1924), but in insufficient detail to be of much value. Therefore the following description, based on a trachea from a male bred at the Wildfowl Trust (specimen PM 60/421), will be presented here.

The tracheal specimen studied is from an immature bird, whose measurements (culmen 43.9 mm., wing 201 mm.) indicate that it was essentially full grown. However, an adult male might exhibit slightly greater tracheal measurements from those presented below. The dried specimen, including the entire tracheal tube, *bulla*, and bronchi, measures 173 mm. The tube length anterior to the *bulla* is 155 mm. The tube is of gradually varying diameter, the widest part, with a diameter of 9.3 mm., is 105 mm. from the anterior tip. There is a diameter of 8.0 mm. or more for a length of 65 mm. near the middle of the tube. The minimum diameter of 3.1 mm. occurs just behind the anterior tip, while the diameter of the tube a few mm. anterior to the *bulla* is 4.1 mm. Thus the tracheal tube agrees with the pochard type in its gradual enlargement towards the middle.

The *bulla* is extremely interesting and is unique, differing from those of all other waterfowl known to me (Fig. 1). Although in its rounded, left-sided shape it is very similar to that of a typical *Anas*, it is extraordinary in that it contains numerous membranaceous *fenestrae*, of varying sizes, over most of its surface. One if the largest of these is a roughly triangular *fenestra* on the lower left side of the *bulla*. This *fenestra* in undoubtedly homologous with the largest *fenestra* of the *bulla* of male Aythyini, which covers most of the flattened left surface of the *bulla* in these species. In pochards there is also an angular crest of bone above this *fenestra*, on the other side of which numerous smaller *fenestrae* occur. Although this crest is lacking in the bulla of the Marbled Teal, the spacial relationships between the two types of *bulla* are fairly obvious.

The second major way in which the Marbled Teal's *bulla* (and those of typical *Anas* species as well) differs from those of pochards consists of the fact that the right chamber is somewhat inflated in pochards. This is only slightly indicated in the Marbled Teal, but a distinct inflation of the right chamber and a corresponding development of an angular crest of bone flanked on both sides by *fenestrae* is clearly apparent in the *bulla* of the

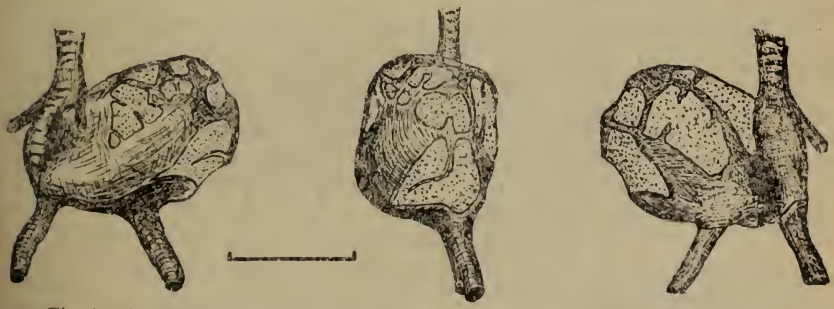

Fig. 1. Ventral, lateral, and dorsal views of the tracheal *bulla* of the Marbled Teal. The ruled line indicates one *centimeter*.

Pink-headed Duck (*Rhodonessa caryophyllacea*), as shown in the illustrations of Garrod (1875) and Beddard (1898). Thus the very different tracheal *bulla* types of *Anas* and the *Netta-Aythya* group are neatly bridged by the intermediate types present in the Marbled Teal and the Pink-headed Duck, and a close relationship between the tribes Anatini and Aythyini is thereby indicated.

A summary of the Marbled Teal's behavioural and antomical characteristics will be listed below, as an aid in a final evaluation of the probable affinities of the species.

Character	*Description*	*Suggested Affinities*
Body plumage	Isabelline, similar to Crested Duck	Anatine
Wing pattern	Speculum absent, secondaries grey	Aythyine
Downy plumage	Weakly patterned, with faint eye-stripe	Intermediate
Pre-flight movements	Repeated chin-lifting	Aythyine
Lobing of hallux	Slightly lobed	Anatine
Manner of feeding	Up-ending, sometimes diving	Anatine
Voice and sexual displays	Unique, but with a few pochard features	
Pre-copulatory behaviour	Mutual drinking and preening dorsally	Aythyine
Post-copulatory behaviour	Male swims in Bill-down posture, female bathes	Aythyine
Hybridization	One record with *Aythya*, none with *Anas*	Aythyine
Tracheal tube of male	Varying gradually in diameter, widest near middle	Aythyine
Shape of tracheal *bulla* of male	Left-sided and rounded	Anatine
Structure of *bulla*	With numerous *fenestrae* of varying sizes	Aythyine

From this list it seems clear that the Marbled Teal is not a member of the genus *Anas*, and in the majority of its characteristics approaches more closely the pochard group. However, because of its weakly lobed hallux, surface-feeding tendencies, and rather *Anas*-like adult plumage, I believe that it should tentatively be retained in the tribe of surface-feeding ducks (Anatini of Delacour, 1956). I also believe that it should be placed in a monotypic genus and considered a direct link between the surface-feeding ducks and the pochards. The generic name *Marmaronetta* (Reichenbach, *Av. Syst. Nat.*, 1852, p. 9), has priority and has frequently been used by taxonomists until recently.

The information presented in this paper was obtained while the writer was supported by fellowships awarded by the U.S. National Science Foundation and the U.S. Public Health Service. My appreciation of these organizations is gratefully acknowledged. The tracheal specimen described here has been deposited in the reference collection at the Wildfowl Trust, and I should like to express my appreciation to the staff of the Wildfowl Trust for their assistance in my studies, and to Peter Scott for kindly reading and criticising this manuscript.

Literature Cited

Beddard, F. E. (1898). *The Structure and Classification of Birds*. Longmans, Green & Co., London. 548 pp.

Delacour, J. (1954, 1956). *The Waterfowl of the World*. Vols. 1 & 2. Country Life, London.

Garrod, A. H. (1875). On the form of the lower larynx in certain species of ducks. Proc. Zool. Soc. Lond., 151–156.

Gray, A. P. (1958). *Bird Hybrids*. Commonwealth Agricultural Bureau of England. 390 pp.

Hochbaum, H. A. (1944). *The Canvasback on a Prairie Marsh*. Amer. Wildl. Inst., Washington. 201 pp.

Jones, T. (1951). Marbled Teal. Avic. Mag., 57: 183–184.

Lorenz, K. Z. (1951–1953). *Comparative studies on the behaviour of Anatinae*. Avic. Mag., 57: 157–182; 58: 8–17, 61–72, 86–94, 172–184; 59: 24–34, 80–91.

McKinney, D. F. (1953). *Studies on the behaviour of the Anatidae.* Ph.D. Dissertation, University of Bristol, 227 pp.
Phillips, J. C. (1924). *The Natural History of the Ducks.* Vol. 2. Houghton Mifflin Co., New York.

Two new birds from Angola

by MELVIN A. TRAYLOR

Received 26th September, 1960

In 1954 Gerd Heinrich collected two males and a female of *Oenanthe monticola* from Mt. Moco and Mt. Soque, Huambo, in the highlands of central Angola, and in 1958 (*Jour. f. Orn.*, 99:357) listed them without subspecific designation. These were the first recorded specimens from inland Angola although the race *albipileata* is found on the arid coast of Benguela. Two other specimens from inland Angola exist, however: a male from Mombolo, Cuanza Sul in the American Museum of Natural History and an immature male from Mt. Moco in the Carnegie Museum, Pittsburgh. These five specimens differ strikingly from all other races of *monticola* (or from any other *Oenanthe*) in having wholly black tails. They may be described as:

Oenanthe monticola nigricauda subsp. nov.

Type: adult ♂ from Mt. Moco, Huambo, Angola; collected 11th October 1954 by Gerd Heinrich. Collector's No. 15982; Chicago Natural History Museum No. 225374.

Diagnosis: differs from all other races of *monticola* in having a wholly black tail with no trace of white. Males differ also in that some specimens (including the type) have black instead of white lesser and middle wing coverts. Compared to *albipileata* the female is a dark slaty gray rather than brownish; compared to nominate *monticola* the female is paler and has the lower belly white. In size *nigricauda* is smaller than *monticola*, about the size of *albipileata*.

Size of type: wing 101; tail 70; culmen 20; tarsus 30.

Distribution: central Angola, confined to the rocky tops of the highest peaks in Huambo and southern Cuanza Sul.

Remarks: Considering only the color pattern of the type, black tail and black wing coverts, a good case could be made for elevating *nigricauda* to the rank of species. However, the four known males exhibit the same type of polymorphism shown by *monticola* in southern Africa. The two adult males from Mt. Moco have black wing coverts, but the immature male from the same locality and the adult from Mombolo have white ones. Similarly, while three of the males have black crowns, the fourth has a gray one. The extent of white on the under parts also varies, being restricted to the lower belly in the two adults from Mt. Moco, but covering the whole belly in the immature and the Mombolo adult. Longer series might show the other south African variants: white crown, black belly and gray phase.

Mayr and Stresemann (1950, Evolution 4: 291–300) have described polymorphism in the genus *Oenanthe*. As they note, one of the chief characters of the genus has been the white or rusty rump and base of tail.